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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,296	12/12/2005	Pengcheng Li	034176 R 004	3215

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EXAMINER	
KRISHNAN, GANAPATHY	

ART UNIT	PAPER NUMBER
1623	

MAIL DATE	DELIVERY MODE
09/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,296	LI ET AL.	
	Examiner	Art Unit	
	Ganapathy Krishnan	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed 7/2/2008 has been received, entered and carefully considered. The following information provided in the amendment affects the instant application:

1. Claim 1 has been canceled.

2. New Claim 12 has been added.

3. Claims 2-11 have been amended.

4. Remarks drawn to claim objections and rejections under 35 USC 112, second paragraph and 102.

Claims 2-12 are pending in the case.

Priority

This application is a 371 of PCT/CN03/00847 International Filing Date: October 08, 2003 published in Chinese, which claims foreign priority to China 03138817.5 under 35 U.S.C. 119(a)-(d). It is noted that PCT/CN03/00847 and China 03138817.5 (July 16, 2003) are both in Chinese and an English translation of these documents have not been filed.

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The objection to claims 1-2 and 5-11 of record has been overcome by amendments.

The rejection of Claims 1-11 under 35 U.S.C. 112, second paragraph, of record, has been overcome by amendments.

The rejection of Claim 1 under 35 U.S.C. 102(b) as being anticipated by Yaku et al (US 4,970,150) of record has been rendered moot by cancellation of the claim.

The following new rejection is made of record.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (Chinese Journal of Biochemical Pharmaceutics, 2002, 23(3), 132-33; cited in IDS of 2/17/06) in

view of Yokota (JP 63-182304) and Kolupavev, et al (Fizilogia I Biokhimiya Kul'turnykh Rastenii, 1991, 23(3), 267-74; English Abstract) newly cited.

Li et al teach that microwave irradiation is known to be used in the rapid and easy preparation of water-soluble chitosan oligosaccharides in an aqueous solution (see English Abstract). The process took three minutes to give a high yield of the oligomer. Li et al. further teach that microwave irradiation may be possibly used in other field of chitosan modification.

Li et al do not expressly teach or suggest the irradiation of chitosan in the presence of an electrolyte such as adding NaCl into in the preparation as instantly claimed.

Yokota teaches the hydrolysis of chitosan in the presence of hydrochloric acid (an electrolyte; see English abstract).

Moreover, NaCl (an electrolyte) is known to be intense hydrolysis of oligosaccharides, or to increase or assist the hydrolysis of oligosaccharides according to Kolupaev et al. (see abstract in English).

It would have been obvious to one of ordinary skillinthe art at the time the invention was made to make chitosan oligomers via degradation of chitosan by microwave irradiation in the presence of an electrolyte since the such a method using electrolyte and microwave individually are seen to be taught in the prior art.

One of ordinary skill in the art would be motivated to use microwave irradiation for the hydrolysis of chitosan since microwave irradiation is known to accelerate and simplify the hydrolysis reaction of chitosan according to Li. Moreover, adding NaCl to the hydrolysis since it is known that NaCl can increase or assist the hydrolysis of oligosaccharides according to Kolupaev et al.

Furthermore, one of ordinary skill in the art would have recognized that using an electrolyte like hydrochloric acid or NaCl would be to avoid oxidative side reactions or further oxidative degradation of the chitosan oligomers by a strong oxidant such as peroxide employed by Li. One of ordinary skill in the art also knows that handling hydrogen peroxide can be dangerous. Substitution of peroxide with a mild electrolyte like hydrochloric acid or NaCl or other similar electrolytes is also safer.

Thus the claimed invention as a whole is clearly prima facie obvious over the teachings of the prior art.

Conclusion

Claims 2-12 are rejected

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathy Krishnan whose telephone number is 571-272-0654. The examiner can normally be reached on 8.30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ganapathy Krishnan/

Examiner, Art Unit 1623

/Shaojia Anna Jiang, Ph.D./

Supervisory Patent Examiner, Art Unit 1623